

We Claim:

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~~Sub.B1~~

1. A composition comprising an hyaluronic acid ester polymer and a selected antigen, wherein said antigen is present in an amount of approximately .1% to about 40% (w/w) antigen to hyaluronic acid polymer.

2. The composition of claim 1, wherein said antigen is present in an amount of approximately 2% to about 25% (w/w) antigen to hyaluronic acid polymer.

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3. The composition of claim 1, wherein the hyaluronic acid ester is selected from the group consisting of an hyaluronic acid where from about 75% to about 100% of free carboxyl groups are esterified with one or more alkyl groups, and a crosslinked derivative of hyaluronic acid in which about 0.5% to about 20% of the carboxyl groups of the hyaluronic acid polymer are crosslinked to hydroxyl groups of the same or a different hyaluronic acid molecule.

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4. The composition of claim 1, further comprising an immunological adjuvant.

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5. The composition of claim 4, wherein the adjuvant is a detoxified mutant of a bacterial ADP-ribosylating toxin selected from the group consisting of LT-K63 and LT-R72.

~~Sub.B2~~

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6. The composition of claim 1, wherein the selected antigen is a viral antigen.

7. The composition of claim 6, wherein the selected antigen is an influenza antigen.

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8. The composition of claim 1, wherein the hyaluronic acid ester is provided in the form of a microsphere.

5 9. The composition of claim 8, wherein the selected antigen is entrapped in the microsphere.

10. The composition of claim 8, wherein the selected antigen is adsorbed to the microsphere.

10 11. A composition comprising (a) a microsphere comprised of an hyaluronic acid ester polymer selected from the group consisting of an hyaluronic acid where from about 75% to about 100% of free carboxyl groups are esterified with one or more alkyl groups, and a crosslinked derivative of hyaluronic acid in which about 0.5% to about 20% of the carboxyl groups of the hyaluronic acid polymer are crosslinked to hydroxyl groups of the same or a different hyaluronic acid molecule; (b) a selected antigen entrapped in, or adsorbed to, the microsphere, wherein said antigen is present in an amount of approximately 2% to about 25% (w/w) antigen to hyaluronic acid polymer; and (c) an immunological adjuvant.

15 Sub. B11

20 12. The composition of claim 11, wherein the selected antigen is entrapped in the microsphere.

25 13. The composition of claim 11, wherein the selected antigen is adsorbed to the microsphere.

30 14. A method of making a pharmaceutical composition which comprises combining the composition of claim 1 with a pharmaceutically acceptable mucosal excipient.

15. A method of making a pharmaceutical composition which comprises combining the composition of claim 11 with a pharmaceutically acceptable mucosal excipient.

5 16. A method of immunization which comprises mucosally administering a therapeutically effective amount of the pharmaceutical composition of claim 14 to a vertebrate subject.

10 17. A method of immunization which comprises mucosally administering a therapeutically effective amount of the pharmaceutical composition of claim 15 to a vertebrate subject.

18. The method of claim 16 wherein the administering is done intranasally.

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19. The method of claim 17 wherein the administering is done intranasally.

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20. Use of an hyaluronic acid ester polymer in the manufacture of a medicament for mucosal immunization, said medicament comprising said polymer and a selected antigen, wherein said antigen is present in an amount of approximately .1% to about 40% (w/w) antigen to hyaluronic acid polymer.